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# Journal of the Society of Arts.

FRIDAY, JUNE 15, 1866.

## Proceedings of the Society.

### CONVERSAZIONE.

A Conversazione took place at the South Kensington Museum, on Wednesday evening, the 13th instant, when 3,540 Members of the Society and their friends were present. The company was received on entering by Mr. William Hawes, Chairman of the Council. The bands of the Royal Artillery and of the Coldstream Guards were in attendance, and performed selections of music during the evening.

### FIFTEENTH ANNUAL CONFERENCE.

The Fifteenth Annual Conference of the Representatives of the Institutions in Union, and the Local Educational Boards, with the Council of the Society, was held at the Society's House on Wednesday, the 13th inst., at 12 o'clock noon. WILLIAM HAWES, Esq., F.G.S., Chairman of the Council, presided.

The following is a list of the Institutions and Local Educational Boards represented at the Conference, with the names of their respective representatives:—

Aldershot and Farnham Local Board .....	Mr. Barrow Rule.
Ashford Local Board .....	Mr. H. Whitfeld.
Banbridge (Ireland) Mutual Improvement Society .....	Mr. Alex. Black.
Banbury Mechanics' Institution and Local Board .....	Mr. J. H. Beale.
Birmingham and Midland Institute .....	Mr. Arthur Ryland.
Bury St. Edmunds' Athenæum and Local Board .....	Mr. John Jackson.
Carlisle Mechanics' Institute ..	Mr. Robert Ferguson, President.
	Mr. Edm. Potter, M.P.
	Mr. H. Adams.
Chatham, Rochester, Strood, and Brompton Mechanics' Institution .....	Mr. F. Butler.
	Mr. S. M. Heckford.
	Rev. A. R. Webster.
Chelmsford Literary and Mechanics' Institution .....	Mr. Thos. Wilkins.
	Mr. Thos. Moss.
Crewe Mechanics' Institute....	Mr. John Taylor.
	Mr. R. Turnbull.
Derby Local Board .....	Mr. H. Winfield.
	Rev. J. Edwards.
	Mr. H. M. Holmes.
	Capt. Crookes, Vice-President.
Dover Museum and Philosophical Society .....	Mr. Thomas Lewis, Hon. Sec.
Gilford (Ireland) Young Men's Mutual Improvement Society ..	Mr. W. R. Masaroon.
Glasgow Institution .....	Mr. Alexander Craig.
Hastings and St. Leonard's Local Board .....	Mr. J. C. Savery.
Hertford Literary and Scientific Institution .....	Rev. Thomas Lander, M.A.

Hertford Local Board .....	Rev. John Davey.
	Mr. J. F. Foster.
Hull Young People's Institution	Mr. Paul Blackmore.
Kent Association of Institutes	Mr. F. W. Monk.
Lancashire and Cheshire Union of Institutes .....	Mr. Alderman Rumney.
	Dr. R. M. Pankhurst.
	Mr. Thomas Lawton.
Lichfield Free Library .....	Captain Dyott.
	Rev. J. L. Petit.
„ Local Board .....	Mr. William Browne.
	Rev. R. Whittington.
London, City of London College	Mr. J. H. Levy.
	Mr. F. Reynolds.
„ Highgate Literary and Scientific Institution..	Mr. James Yates.
„ Lambeth Evening Classes	Mr. T. E. Heller.
„ Mechanics' Institution..	Mr. T. A. Reed
	Mr. A. T. Rees.
„ Metropolitan Association	Rev. G. B. Macilwain.
	Mr. H. H. Sales.
„ Royal Polytechnic Institution .....	Rev. C. Mackenzie.
„ St. Stephen's Evening School .....	Mr. Joshua Cawood.
	Mr. W. H. Baker.
„ Walworth Literary and Scientific Institution..	Mr. J. S. Noldwitt.
Manchester Mechanics' Institution .....	Mr. Alderman Rumney.
Peterborough Mechanics' Institution .....	Mr. S. Rutland, President.
Smethwick, Messrs. Chance's Library .....	Mr. F. Talbot, Hon. Sec.
Southern Counties Adult Education Society .....	The Hon. and Rev. S. Best.
Southport Athenæum .....	Mr. Thomas Milne.
	Lord Lyttelton, President.
South Staffordshire Association	Rev. Julius Lloyd.
	Mr. F. Talbot.
Swindon (New) Mechanics' Institution .....	Mr. J. L. Fallows.
Wallingford Mechanics' Institution .....	Mr. B. Atkinson.
	Mr. J. S. Pakington, President.
Worcestershire Union of Institutes .....	Rev. D. Melville.
	Rev. A. Waller.
Yorkshire Union of Institutes	Mr. H. H. Sales.

The Secretary read the following

### REPORT TO THE COUNCIL OF THE SOCIETY FOR THE ENCOURAGEMENT OF ARTS, MANUFACTURES, AND COMMERCE.

GENTLEMEN,—In recording the proceedings of the Union for the past year, I will remind the Council that though the appointment of visiting officers on the part of this Society in the District Unions was established in the former year, yet this year is the first in which the system has been in complete operation. These gentlemen have been extremely active and zealous in their duties, and fourteen new Institutions have been added to the Union during the past year, principally, I think I may fairly say, through their influence. As, however, an equal number have ceased their connection with the Society, in most cases through want of funds, the total number of institutions remains the same. The reports of these gentlemen as to the state of the Institutions in their respective districts (from which I shall presently quote)

are, upon the whole, favourable, but with the exception of that relating to the Lancashire and Cheshire Union, no very marked progress is recorded.

Before I quit the subject of the visiting officers I must not omit to notice the great loss which the Yorkshire Union and also the Society of Arts has sustained in the death of Mr. Barnett Blake, who admirably discharged the duties of visiting officer to the Yorkshire Union, both on the part of that body as well as of this Society. One better adapted for such work could scarcely be found; his untiring zeal, his remarkable intelligence, and his great facility in expressing his views, combined with true heartiness of purpose and genuine love for the work he was engaged in, rendered him peculiarly fitted for the duties to which he had devoted himself. A constant attendant at every Conference for many years, we shall sadly miss him, and the absence of his well-known face and familiar tones cannot fail to cast a shade of sorrow over the faces of his old friends whom I now see around me.

While I have noted the exertions of the visiting officers and their success in one direction, I regret to state that the number of candidates attending the Final Examinations has this year been less than last year, the figures being—for 1865, 1,199, whilst for 1866 the total has only reached 1,096. From what cause this has arisen it is of course difficult to say, but in comparing the tabular statement giving the number of candidates examined in the various localities this year with that for 1865, I observe that the Oldham Science School, which this year is combined with the Lyceum, has only twenty-five candidates, whereas these two Institutions last year sent no less than fifty-seven. I also notice that most of the Institutions at Glasgow, the South Staffordshire Association, and the Institutions at Bolton, Bacup, Devonport, and other places—which I will not trouble you by enumerating—all send up less candidates than last year. The number examined at Leeds, under the auspices of the West Riding Board, is also less, but this may, to some extent, be attributed to the death of Mr. Barnett Blake, above referred to, whose successor has not yet had time to make his influence felt in promoting the interests of education in that district. Turning to the metropolis I observe a great falling off in the number coming from the City of London College, who sent up about one-third less, though the success of that flourishing Institution in carrying off our prizes has been most remarkable. At the Royal Polytechnic Institution, however, the number of candidates has been larger.

While the numbers have decreased—and it is the first time since the establishment of the

Examinations that I have not had to record an increase—it is somewhat remarkable that the number of those who have been unsuccessful is greater than last year, that is, with 1,096 examined this year the number who have not passed is 257, whilst last year, with 1,199 candidates, there were only 200 who did not gain certificates. This leads me to another matter to which I think attention should be drawn with a view of considering whether any steps can be taken to impress upon the Local Boards the necessity of greater strictness in certifying the fitness of candidates to be examined. It is a duty which the Boards owe, not only to the examiners, but also to the candidates themselves. The allowing unprepared candidates to come forward not only gives the examiners unnecessary labour, but, by the disappointment it causes to the candidates, is apt to discourage both them and others from coming up in future years. In some instances the candidates have shown in the papers worked such a complete ignorance, not only of the special subjects, but also of the very rudiments of education—spelling, grammar, and writing—that it is clear there has been such great laxity on the part of the Local Boards as to call for serious consideration on the part of the Council.

While, however, I speak strongly on this point, it is fair to add that, in reference to many of the subjects, the examiners speak in the highest terms of the qualifications and work of the candidates. I refer to the examiners' reports, which are appended hereto.

The number of papers worked this year in the various subjects is 1,570 as compared with 1,744 last year; and the certificates awarded on the present occasion are, first-class, 203; second-class, 420; third-class, 520, as against 315, 519, and 517 last year, whilst 427 papers have received no certificates this year, as compared with 393 who gained none last year. Notwithstanding this, the number of prizes taken is the same as last year, and the amount is larger, the figures being 51 prizes, amounting to £230 5s. this year, whilst last year the sum was £211 5s. These numbers include the Prince Consort's prize and the Royal Horticultural Society's prizes.

The Prince Consort's Prize is this year taken by James Rigby Smith, aged 25, of the City of London College, clerk, who has, in this and the three preceding years, obtained the following first-class certificates:—

- 1863. Political Economy—First-class Certificate.
- „ Arithmetic—First-class Certificate.
- „ Geometry—First-class Certificate.
- 1864. Book-keeping—First-class Certificate.
- 1865. Algebra—First-class Certificate, with Second Prize.
- 1865. Logic and Mental Science—First-class Certificate.
- 1866. Domestic Economy—First-class Certificate.

## ELEMENTARY EXAMINATIONS, 1866.

Name of Union or Local Board.	Number of Centres.	HIGHER GRADE.				LOWER GRADE.			
		MALE CANDIDATES.		FEMALE CANDIDATES.		MALE CANDIDATES.		FEMALE CANDIDATES.	
		Exa- mined.	Passed.	Exa- mined.	Passed.	Exa- mined.	Passed.	Exa- mined.	Passed.
Aldershot and Farnham District .....	2	2	2	..	..	13	11	5	2
Bessbrook (Newry) .....	1	2	2	..	..	2	1	..	..
Brighton .....	1	1	1	..	..	..	..	..	..
Carlisle Mechanics' Institution .....	1	1	1	..	..	..	..	..	..
Christchurch .....	1	10	6	3	3	18	14	18	11
Derby .....	1	10	10	..	..	..	..	..	..
Hertford .....	1	3	3	..	..	33	27	..	..
Hastings and St. Leonard's .....	1	2	2	..	..	2	..	..	..
Ipswich .....	1	6	4	..	..	..	..	..	..
Kent Association of Institutes .....	6	32	25	..	..	62	55	6	6
Lancashire and Cheshire Union of Institutes ..	53	175	88	..	..	605	270	165	50
Lichfield .....	1	3	1	..	..	10	10	..	..
Liverpool College .....	1	4	4	..	..	3	2	..	..
Newcastle Church of England Institution ....	1	4	4	1	1	..	..	..	..
New Swindon .....	1	9	9	..	..	16	9	..	..
Oldham Lyceum .....	1	5	..	..	..	13	6	6	2
South Staffordshire Association .....	12	51	29	1	1	121	61	11	5
Waterford .....	1	5	1	..	..	11	9	..	..
West Riding Educational Board .....	16	73	39	13	4	145	116	48	42
Worcestershire Union .....	8	26	20	..	..	44	26	14	10
York .....	1	..	..	..	..	1	1	..	..
TOTALS .....	112	424	251	18	9	1,099	618	273	128

The prizes in botany, offered by the Royal Horticultural Society, for gardeners, have been taken, but the Society of Arts prizes in this subject have not been taken, inasmuch as no candidate fulfilled the condition of obtaining a first-class certificate. In Floriculture, and in Fruit and Vegetable Culture, the prizes offered by the proprietors of the *Gardeners' Chronicle* have not been taken, because the candidates in these subjects, though taking first-class certificates, have not also taken certificates in book-keeping or mensuration, as laid down by the conditions of the offer. The number of gardeners who have competed for these prizes and certificates is ten.

Hitherto I have spoken only of the Final Examinations, held by the examiners appointed by the Society itself, but I must not omit to mention the Elementary Examinations, held by various District Unions and Local Boards, for which, as you are aware, the Society merely supplies the papers, the awards being made by the local authorities. The results of these Examinations are given in the following table. In order fairly to compare the figures with those given in my last year's report, it will be necessary to eliminate the Metropolitan Association, as that body did not use the Society's papers,\*

\* This was, in fact, the case last year; but the difference was so unimportant that it was thought the results of the examination of that association might fairly be classed with those of other bodies.

and has so far modified its system of elementary examinations that it has been thought better to speak of it separately from the rest. It appears, then, that in 1865, these examinations were held by 15 District Unions or Boards at 99 centres; this year, 21 District Unions or Boards have held them at 112 centres. In 1865, there were 1,460 candidates, of whom 620 obtained certificates. Of these, 464 were candidates in the higher grade, of whom 182 obtained certificates; 996 in the lower grade, of whom 438 obtained certificates; this year the whole number of candidates examined was 1,814, of whom, however, no less than 1,006 obtained certificates, the proportions being 442 higher grade, with 260 successful; and 1,372 lower grade, with 746 successful. The tabular statement shows that among the higher grade candidates were 18 females, 9 obtaining certificates; and among the lower grade were 273 females, with 128 successful; while, last year, there were in the higher grade 13 females, 5 of whom were successful; in the lower grade, 128 females, with 62 successful.

With regard to the Metropolitan Association, which is omitted from the list for the reasons I have given, I find that, last year, that body held their examinations at 16 centres. There were in the higher grade 88 male and 42 female candidates, of whom 20 and 7 respectively obtained certificates; in the lower grade there were 368 males and 86 females, gaining respectively 127

and 35 certificates. This year, the corresponding numbers are—In the higher grade 37 male and 20 female candidates, of whom 13 and 14 respectively obtained certificates; in the lower grade 231 male and 57 female candidates, the certificates awarded being 150 to the former and 32 to the latter.

It appears, therefore, that there has been a material increase in the number of elementary candidates, which, I think, may fairly be attributed, to a great extent, to the influence of our visiting officers; but what is more remarkable is the much larger proportion that have been successful in obtaining certificates. As these examinations are held, however, entirely by the local authorities, I am unable to judge whether this is owing to any actual improvement on the part of the candidates, or to less strictness on the part of the local examiners. I am bound to hope that the former is the case.

As I said in my last year's report, these numbers, large as they are, inadequately represent the amount of encouragement really afforded to the progress of elementary education by the various Local Boards and Institutions connected with the Society. A considerable number of them prefer adopting a scheme of elementary examinations of their own. Indeed I am informed that this feeling is gaining ground in many localities, and you will have observed, in the list of subjects proposed for discussion by the Conference, the question—"Whether the Society of Arts should continue to furnish elementary papers to Unions and Local Boards, or whether it would be better for it to confine its attention exclusively to the Final Examinations?"

Upon this subject it would not become me to express any opinion; but there is a point in connection with it to which I cannot but draw the serious attention of the Council. The fact that the Elementary Examination papers, as well as the forms of certificate, are supplied by the Society of Arts, appears to have led to the false impression that these examinations are held, and the certificates awarded by the Society itself, and I hear from many quarters that the elementary certificates are frequently represented as "Society of Arts' certificates." If, therefore, it is decided to continue this system in future, it is a matter of the gravest importance that every effort should be made to disabuse the minds of employers of labour and others of this very serious error, for if it should become general, it would tend to impair the high character which the real Society of Arts certificates have gained, and materially to diminish the influence the Society has hitherto exercised in the promotion of education.

In order to afford you further information as to the state of the District Unions, I quote from the reports of our visiting officers:—

Mr. Jones, of the South Staffordshire Association, says:—

During the past year I have had frequent opportunities of visiting the various institutions which are in union with the Society of Arts, and have noticed carefully the nature of their operations. The principal feature in the work of the past season has been the continued success of the entertainments, which are now mostly held on each Monday evening, and, as a rule, the character of the amusements provided has been decidedly superior to former seasons. Though the entertainments, as entertainments, have been successful, they appear to have exercised in general a prejudicial influence upon the more solid work which institutions ought to perform. For instance, lectures and classes have not been so well attended, and in several cases classes which promised to be very useful, have been closed from want of students, and when evening schools are conducted by institutions, the teachers report that the entertainments do seriously interfere with the school work. I cannot report that, on the whole, there appears to have been much advance among the institutions under notice since the last annual Conference.

Mr. Lawton writes as follows:—

The Union of Lancashire and Cheshire Institutes comprises upwards of 120 institutes; 75 per cent. of which are named Mechanics, Educational, Literary or Working Men's Institutes; 17 per cent. Mutual Improvement Societies; 7 per cent. evening schools; and 3 per cent. Working Men's Clubs or reading-rooms. The Council of the Union attach great importance to class instruction, both in elementary and special subjects. In the discharge of my duties I am required not only to confer with officers and committees of institutes in respect of the operations of the Evening Classes, but also to instruct the classes, and make a monthly report to the Council. Further to stimulate teachers and pupils, general and local prizes are offered to the most successful candidates at the examinations, held under the auspices of the Union.

The following statistics will give some idea of the progress made in this district during the past year:—

	Month ending May 31st, 1865.	1866.
Recognised centres of Examination, being Institutes in union with the Society of Arts	29	37
Institutes with successful candidates at the Elementary Examinations .....	45	66
Total number of elementary certificates awarded .....	174	408
Number of elementary certificates awarded to female candidates .....	15	50
Institutes with Government science classes ..	23	33
	1864.	1865.
Final Examinations of the Society of Arts—		
Number of certificates awarded .....	247	280
Government Science Examinations—Total number of successful candidates .....	557	853

Mr. Marcus, of the Worcestershire Union, writes:—

The number of Institutions and night schools in the Worcestershire Union remains about the same; there is, however, a larger proportionate number of members, especially females. The number of candidates this year for the Elementary Examination shows a considerable increase—58 for the lower, and 26 for the higher; total, 84, against 59 last year. The results of the Final Examinations have been equally gratifying as regards increase in numbers. It may safely be said that the advantages and desirability of the Society's Examinations are successfully working their way in this Union. The special prizes offered by the Union for the most

successful candidates in the Elementary Examinations (£2, £1 10s, and £1, for the higher, and four of 10s. for the lower), have a very good effect. The district visiting, in addition to frequent correspondence, has during the year brought the subject of examinations, and the claims of the Society of Arts, under the notice of twenty-four Institutes and night-schools.

Mr. H. H. Sales, in reference to the Yorkshire District writes as follows :—

The sudden death of my predecessor, Mr. Barnett Blake, a short time since, renders it impossible for me to report upon the work of the district during the past year. The returns show a large decrease in the number of candidates in the examinations in elementary knowledge, but this can be fully accounted for by the illness of Mr. Blake, who hitherto superintended all the arrangements, but this year failed in health just previous to the examinations being held, and consequently unavoidable derangements occurred that led to the disappointment of many candidates. A stranger cannot fail to be impressed with the heartiness with which educational work is carried on in this district, and the results appear to be commensurate with the exertions made.

Mr. H. H. Sales, in reference to the Metropolitan District, writes as follows :—

There has been a great decrease in the number of candidates for the examination in elementary knowledge held during the past year. Exceptional circumstances may account for a small portion of the diminution in the case of a few local boards, but I am of opinion the real cause will prove not to be of an exceptional character. The bulk of class instruction in this district is carried on in evening classes, held in the National school-rooms. Under the new regulations of the Committee of Council on Education, these classes are eligible for State aid, and the managers readily avail themselves of the same; hence, the elementary examinations, conducted according to the scheme of the Society of Arts, conferring only honorary distinction of uncertain value, and not pecuniary assistance, do not offer sufficient advantages to interest managers and teachers. A large increase, year by year, in the number of candidates in the Final Examinations can hardly be expected. London has but few Institutions in which advanced classes are carried on, and, with scarcely an exception, these institutions are in union with the Society of Arts, and send almost uniformly the same number of candidates. The evening classes before mentioned, as at present organized, will send very few candidates to the Final Examinations. There is a great want in the suburban districts of purely educational institutions for adults, efficiently conducted upon a thoroughly liberal basis, to which the clerk and mechanic could resort for instruction. Unfortunately, while the mental material is ready to hand, there is a lack of experienced promoters, men combining zeal and energy with discretion and educational experience. As the suburbs become inhabited by the working classes the middle classes take up their residence farther outwards, and are thus unable to devote personal attention, without which an Institution cannot succeed. Failing these institutions, adult education is promoted by evening classes only, which, as a rule, cannot lead the pupils on to the attainment of so high a standard of knowledge as may be reached in a well organized institution. The division of the metropolis into District Local Boards has not proved successful. Even when confined to one parish, so many conflicting elements exist that, however pleasant in theory, the union of Evening Classes, Night Schools, and Institutions into one Local Board cannot be maintained. Complaints are numerous respecting the difficult papers set in many subjects in the Final Examinations; many candidates have been deterred from presenting themselves for examination, from the opinion that the examination papers are exceedingly

stiff. I venture to submit that the questions in future papers should not, while requiring exact replies, enter so fully into details, a knowledge of which can only be gained by more lengthened study, and with greater facilities than are within the reach of the great majority of our students. The last winter sessions witnessed a large increase in the number of adult students in attendance at evening classes, due mainly to the impetus given to evening work by the Government measures. The standard required by the Committee of Council is so very moderate that there is abundant room for the Final Examinations of the Society of Arts, whose scheme requires to be constantly brought under public notice, although only the very best of the class students will reach the required standard.

P. LE NEVE FOSTER, *Secretary*.

## APPENDIX.

### EXAMINERS' REMARKS.

The examiners in the respective subjects make the following remarks on the work done in this year's Final Examinations :—

*Arithmetic*.—The mechanical work in the various papers is neatly done, and is, upon the whole, fairly correct. There are still unmistakeable evidences that a little more attention to theory would amply repay the time bestowed upon it.

*Book-keeping by Double Entry*.—The number of candidates is on this occasion 209, against 275 in the examination of 1865. The quality of the papers generally is satisfactory, and some of them evince a thoroughly practical and intelligent knowledge of the subject.

*Algebra*.—Sixty-five candidates have presented themselves for examination in Algebra. Of these eight have gained 1st class certificates, 10 2nd class, 28 3rd class and 19, or rather more than one-fourth, have failed to qualify. Every question has met with a correct solution. The first-class candidates, and several of the second-class have acquitted themselves very satisfactorily; one of the former has gained almost full marks. On the whole the answering has been satisfactory, and the style of expression and mode of working out the answers exhibit a decided superiority over the performances of preceding years.

*Geometry*.—The candidates this year have, with a few exceptions, done themselves great credit; the number of first and second-class certificates bears a larger proportion to the whole than usual, and several of the more successful papers show a very solid and accurate knowledge of the subject. I have had very much fewer specimens of bad writing and spelling, and I consider that this year's result is very encouraging, although the numbers are still small.

*Mensuration*.—The paper is done much better this year than last. The first-class contains one-sixth of the candidates, and nearly half of them are in the first and second classes. The range of the marks, from nearly full marks down to zero, shows a remarkable difference in their knowledge of the subject. The working is in many instances too bare, and would be improved by a few words of explanation. Linear is sometimes confounded with square measure.

*Trigonometry*.—The number of candidates continues to be small. The answers of the examined were better done than hitherto. In fact, every question proposed was worked out by some one or other of the candidates.

*Conic Sections*.—Seven candidates have sent in answers to the questions on conic sections this year, of whom six have passed very creditably, although no one has reached the standard required for a first-class certificate. The general average of the work is higher than of late years, and the number of candidates has increased. I trust

that others may be induced to study a subject which is, practically as well as educationally, of great value.

*Navigation and Nautical Astronomy.*—Of the two papers worked by candidates, one is good—the other but indifferent. The former of the two candidates is well versed in the theory, but in the solution of one of the questions has committed two curious errors. Too great care cannot be inculcated on candidates to secure accuracy of work.

*Principles of Mechanics.*—I am very much pleased with the papers worked by the candidates this year. As a whole, they are the best that I have inspected. Those papers which I could not pass have not been discreditable in one point of view. The failure is to be attributed, I imagine, to want of time for preparation, and not to defect in the answers given—to their paucity, not their quality. There is a marked improvement in the expression of ideas, precision of thought, and mathematical knowledge, which argues hopefully for the education of the country.

*Practical Mechanics.*—The present examination is a satisfactory one, the papers sent in being very much better than those which I received last year. Accordingly, one first-class certificate and five certificates of the second class have been awarded.

*Electricity and Magnetism.*—The papers this year are by far the worst I have ever had. Two papers are positively absurd, one being entitled to four, and the other to two per cent. No one is entitled to either a first or second-class certificate.

*Light and Heat.*—Three of the candidates this year have shown considerable knowledge on the properties of light and heat; but the remarks made last year apply in still greater force to the examinations of this year, that the candidates need more study in condensed and accurate methods, so as to enable them to make the best use of their time in examinations.

*Chemistry.*—The papers this year are less satisfactory than last year. This may, in part, be due to greater difficulty in the questions. I am, however, inclined to attribute it mainly to the fact that chemical theories have of late been so much altered by the great extension of our knowledge of facts, that many teachers have not yet fully matured their system of instruction in accordance with the theories now prevailing. I confidently anticipate great benefits to pupils and teachers from the change, once it is fully carried out—benefits such as have appeared elsewhere.

*Mining and Metallurgy.*—None of the papers of this year exhibit any remarkable degree of excellence.

*Botany.*—Of the nineteen candidates this year three return answers which are simply disgraceful, and the answers of five others are but little better. Seven have omitted to attempt the description of the specimens sent down. Altogether, I must class twelve as “not passed.” One candidate sends very fair answers in structural, descriptive, and systematic botany, but fails in his physiology, and that apparently not entirely through haste in attempting too much. While of late years much stress has rightly been laid upon the importance of testing candidates in practical and descriptive botany,—testing their knowledge by actual specimens—it will not do to allow this to operate unduly to the detriment of the more purely physiological branches. At least one in the second class this year no doubt may take an honourable place in the first column should he try again. Bearing this in mind, from the low average and absence of any first class paper, I cannot regard the examination this year as satisfactory.

*Floriculture.*—The candidates scarcely rise above mediocrity in their appreciation of the intent and bearing of many of the questions put to them in this subject. They fail most especially, as a rule, in conveying clearly and concisely the purport of their own replies, and lose force of expression by multiplying

words. They are strongly recommended, as a part of their studies, to practice the writing down of short pithy remarks on each of the subjects set down in the programme, comparing them with the statements in the text books, and repeating them from time to time, on each occasion cutting out all superfluous words, and in this way getting the essential particulars well impressed on the memory. The work is, on the whole, scarcely equal to what I should have expected.

*Fruit and Vegetable Culture.*—In reference to the papers on this subject I have to express my satisfaction that not less than one-fourth of them should be entitled to first-class certificates, and another fourth should be of such a character that, though they cannot rank in the first-class, they take an honourable position in the second. Another fourth comes closely on the second-class certificate, and consequently take a high place in the third class, and from the way in which these candidates, both of the second and third classes, have sent in their papers I feel justified in saying that, by continued diligence, and by the application of the knowledge they already possess, they will on a future occasion take a higher position than that which they have now gained. I am pleased to see the rising generation of gardeners devoting themselves to a study of the theory of gardening—to a study of those principles which ought to regulate every gardening operation, and without a perfect knowledge of which there can be no perfect practice. Practice without a knowledge of the principles by which it is governed is an insecure and baseless foundation on which to rest when natural conditions are disturbed or unexpected difficulties arise. I therefore urge on gardeners most strongly the necessity of studying the principles which regulate vegetation; but at the same time I desire also to see the fruits of that study exemplified in the practice, for a knowledge of the theory without the practice is worthless. Judging from what I have seen in these papers I am of opinion that there is a fine field for the Society to cultivate, in elevating the standard of gardeners. I would suggest that some means be taken to induce employers to influence young men in their gardens to go up for these examinations. It is a reasonable thing for an employer to demand, and it would be the means of raising a class of men much superior to that which we at present have, and which is by courtesy called “the gardening class.”

*Animal Physiology.*—Amongst the papers this year there are none of marked excellence, though there are many which indicate that the subject has occupied the serious attention of the writers. A juvenile inability to grasp the subject, and a grievous deficiency in spelling, are still noticeable; but they are limited to a smaller number of candidates.

*Domestic Economy.*—The papers sent in at this examination are again an improvement on preceding years, but the number offering themselves for examination does not increase.

*Political and Social Economy.*—The examiner reports rather favourably upon the work of the candidates this year. Some of them, however, have only answered the questions referring to political economy proper; and the examiner desires to impress upon the candidates generally the importance of studying the institutions of their country.

*Geography.*—Upon the whole, I am hardly so well satisfied with the papers of this year as with those of some former years. The proportion of those entitled to first-class certificates is, indeed, a fair one, but a large number are of only third-class merit, and not a few are failures. The chief cause of failure appears to lie in the want of methodised study—directed to a definite purpose, and guided by better adjuncts, in the way of books and maps. I am aware that large allowance must be made for the limited opportunities which may be presumed to be at the disposal of many of the candidates; still, mere school-boy knowledge (which is all that a

large number of the answers exhibit) will neither secure the higher awards of the Society, nor be attended by the fructifying influences which information of larger scope—acquired by gradual and systematically-organised stages—exerts on the mind of the true student. Upon these and other points, I would strongly urge upon intending candidates for future occasions a closer attention to the conditions and suggestions offered in the programme.

*English History.*—I have great reason to be satisfied with the results of the examination. The answers of the candidates who have been placed in the first class are remarkable for fulness and precision. When I consider the variety of the questions, the extent of the period embraced by them, and that three hours only were allowed for the examination, I am astonished at the readiness and accuracy displayed by most candidates in the first-class, and by many in the second. I had expected that two-thirds only of the questions would have been answered, but many of the candidates have fairly grappled with the whole number. Of those who have not succeeded in passing some few showed themselves utterly incompetent; others, with a little more attention to the subject, might reasonably aspire to something better than a mere pass certificate.

*English Literature.*—The work has, I think, surpassed that of any previous year. The candidates have increased in number, and the proportion of those who have acquitted themselves well has never been greater. Even in the inferior exercises, a considerable improvement in the method of answering has shown itself. The candidates have been for the most part careful to master the meaning of the questions and to keep their answers to the point.

*Logic and Mental Science.*—There are only eight candidates this year. Two of these are altogether defective. Three show the results of a good deal of reading and thought in philosophy as well as a competent knowledge of formal logic. One shows a fair knowledge of logic and philosophy, and two a fair knowledge of logic without any attempt at answering in any further subject.

*Latin and Roman History.*—The work has decidedly improved this year in quality. All have passed, and one of the translations is excellent.

*French.*—The number of candidates that have not passed is relatively small this year, being only 25 out of 116. But whilst the average quality is satisfactory, I regret to find so small a proportion of first, or even second-class papers. This I mainly attribute to the evident neglect by most candidates of the works recommended to their notice in the programme of examinations. As a natural consequence of this neglect, the less elementary questions in Part II., bearing upon some very important and practical features of the French syntax as contrasted with the English, have been left unanswered by the greater number of candidates, and yet every one of those questions is to be found fully explained in the very first pages of one of the books recommended in the programme. How very much success depends upon the nature of the method pursued may be inferred from the fact that the successful papers come almost invariably in groups. Local Boards would, I venture to think, do well to look to this. I am also sorry to observe the many flagrant inaccuracies of several candidates in writing their own language.

*German.*—The papers of this year have been worked with great care and accuracy. Some of the candidates have managed to decline their nouns and conjugate their verbs almost without a fault. The translations from German into English are, with only few exceptions, free from misunderstandings. The rendering of the English into German bears evident proofs of progress. The essay, however, might be better; however brief, it ought, as is the case this time, not merely to assert again in other words the idea already contained in the theme, but should

start from an acknowledged point and proceed argumentatively.

*Italian.*—These papers on the whole scarcely reach the point of merit attained by the candidates last year. The study of the language seems much too superficial if not negligent. Some, however, appear to have been worked with care, and show considerable knowledge of grammar, general construction, and idioms also; others are very deficient on these points of paramount importance.

*Spanish.*—The examiner reports favourably of the work done by the candidates.

*Free-hand Drawing.*—The three following subjects were given this year to the candidates for examination:—To draw heads from knowledge, to make an original design illustrative of the occupation of the draughtsman, and to make a drawing of a time-piece. The Local Boards supplied some very handsome time-pieces, from which a number of highly meritorious outlines have been made. Fifty-five candidates sent in fifty-eight drawings, three of which were heads, nine various designs for manufacture, &c., and 46 outlines from the time-pieces. Of the fifty-five candidates, four are deserving of first-class certificates, nineteen of second class, twenty-four of third class, and there are only eight who have not passed. This, as compared with previous years, is much above the average of certificates gained by the candidates in free-hand drawing at these examinations.

*Geometrical Drawing.*—The same causes which operated at the previous examinations have produced the failure at the recent one. The practical geometry of the line and plane is not sufficiently studied; most candidates seem to consider plane geometry as constituting the most important branch of the subject; as regards application in the arts, the reverse is the truth—plane geometry is of little use except as ancillary to solid. No one can be considered as tolerably grounded in this subject who could not construct every question in this division of the paper. That the time allowed was sufficient is proved by the fact that no candidate has constructed less than four and most have done six questions, while several have done seven.

*Theory of Music.*—The number of candidates this year is larger than before. I have been enabled to place nearly a fourth of them in the first class, and more than a fourth in the second. Many of the third class papers show accurate, though as yet limited, knowledge. The number of candidates “not passed” is small. This is a great improvement on any former year. Future candidates should bear in mind that wordy encomiums on great composers present no test whatever of acquaintance with musical history.

TABLE I.

This table shows the ages of the 1,284 candidates from whom return papers were received. Of these 1,096 underwent the final examination.

Age.	No. of Candidates.	Age.	No. of Candidates.
16 .....	161	32 .....	3
17 .....	190	33 .....	2
18 .....	176	34 .....	8
19 .....	153	35 .....	1
20 .....	149	36 .....	5
21 .....	107	37 .....	5
22 .....	79	38 .....	4
23 .....	52	39 .....	2
24 .....	57	41 .....	2
25 .....	46	44 .....	1
26 .....	31	45 .....	2
27 .....	30	46 .....	3
28 .....	23	48 .....	1
29 .....	9	49 .....	1
30 .....	14		
31 .....	7		
		Total 1,284	



TABLE II.  
RESULTS OF THE FINAL EXAMINATION OF 1866.

NAME OF LOCAL BOARD.	No. of Candidates Examined by Local Board.	No. of Candidates who Passed Previous Examination by Local Board.	No. of Candidates Examined at Final Examination.	No. of Candidates who passed at Final Examination.	No. of Papers Worked at Final Examination.	No. of First-class Certificates awarded.	No. of Second-class Certificates awarded.	No. of Third-class Certificates awarded.	No. of Prizes awarded to Candidates.	No. of Unsuccessful Candidates.
Aberdeen ...	42	26	26	18	29	1	12	8	...	8
Aldershot and Farnham ...	7	7	7	6	12	2	6	2	1	1
Alton ...	...	...	3	3	8	1	4	2	...	...
Ashford ...	9	9	10	8	12	5	1	4	...	2
Banbridge (Ireland) ...	...	...	2	2	5	1	...	4	...	...
Belfast ...	6	6	6	5	8	3	2	2	...	1
Bessbrook (Ireland) ...	4	3	2	2	4	1	...	3	...	...
Birmingham and Midland Inst. ...	22	22	29	27	38	5	11	18	...	2
Blackburn... ..	11	11	11	5	15	2	1	4	...	6
Bradford ...	22	18	26	18	37	1	6	18	...	8
Brighton ...	1	1	1	1	4	2	...	2	...	...
Bristol ...	31	28	27	15	27	4	6	5	1	12
Burrough-road Evening Classes ...	24	23	21	13	21	1	5	7	1	8
Carlisle ...	12	12	10	7	13	...	6	4	...	3
Chatham, &c. ...	3	3	3	2	5	1	2	1	...	1
Chelmsford ...	...	...	2	2	3	1	...	2	...	...
Christchurch ...	49	24	6	4	9	2	2	2	...	2
Derby ...	10	10	11	11	21	4	7	10	...	...
Devonport ...	9	9	23	22	39	11	19	8	4	1
East Lancashire Union:—										
Burnley ...	27	27	35	30	59	10	7	27	2	5
Haslingden ...	...	...	9	4	12	...	2	3	...	5
Faversham ...	...	...	4	3	7	...	4	1	...	1
Glasgow (Athenæum) ...	22	22	27	31	10	15	16	3	...	...
" (Institution) ...	23	21	17	13	20	2	7	6	...	4
" (Mechanics' Institution) ...	103	66	59	45	64	6	17	26	...	14
" (Popular Evening Classes, And. University) ...	15	12	17	14	20	1	9	6	...	3
Halifax (Working Men's College) ...	21	17	24	21	38	11	7	14	...	3
Hastings and St. Leonard's ...	2	2	4	4	8	1	2	4	...	...
Hertford ...	1	1	2	2	...	...	1	1	...	...
Hull ...	8	8	7	7	12	1	4	7	1	...
Ipswich ...	11	10	10	9	14	4	5	4	1	1
Lancashire and Cheshire Union:—										
Accrington ...	2	2	1	1	2	...	1	1	...	...
Alderley Edge ...	3	3	2	1	3	...	...	2	...	1
Ashton-under-Lyne ...	24	6	4	2	4	1	1	...	...	2
Bacup ...	8	8	10	5	15	1	2	3	...	5
Bollington ...	14	...	2	...	2	...	...	...	...	2
Bolton ...	16	16	11	7	13	...	2	5	...	4
Bury ...	7	7	8	5	17	...	1	5	...	3
Clitheroe ...	9	9	9	3	11	1	...	3	...	6
Crewe ...	3	3	9	5	19	...	4	...	...	4
Dean Mills ...	...	...	1	1	1	...	...	1	...	...
Droylsden ...	30	27	12	7	17	...	6	6	...	5
Farnworth and Kersley ...	8	8	9	3	9	...	...	3	...	6
Freetown, Glossop ...	1	1	2	2	2	1	...	1	...	...
Hyde ...	28	...	3	1	4	...	1	1	...	2
Macclesfield ...	3	...	4	3	8	...	1	3	...	1
Manchester Athenæum ...	5	5	6	5	10	...	2	4	...	1
Manchester M. I. ...	53	49	62	48	86	8	26	23	...	14
Mossley ...	5	5	6	6	7	...	6	...	...	...
New Mills ...	1	1	2	2	2	...	...	...	...	...
Oldham (Lyceum and Science School) ...	28	20	25	19	37	2	3	15	1	6
Pendleton ...	3	3	2	2	4	2	2	...	...	3
Salford Working Men's College ...	36	35	44	36	56	6	22	16	...	...
Staleybridge ...	9	9	10	6	18	...	1	7	...	4
Stockport ...	7	7	6	5	11	1	3	1	...	1
Leeds Young Men's Christian Association ...	4	3	6	6	14	2	2	3	1	...
Leicester ...	...	...	2	2	3	...	1	1	...	...
Lichfield ...	11	11	14	12	18	1	10	4	...	2
Liverpool College ...	7	6	6	6	12	...	5	4	...	...
London (City of London College) ...	50	42	74	66	102	33	32	26	16	8
" (Royal Polytechnic Inst.) ...	36	31	34	25	45	7	9	19	5	9
" (St. Stephen's, Westminster) ...	6	6	8	7	13	...	2	7	...	1
London Metropolitan Association:—										
Bayswater ...	...	...	1	1	1	1	...	...	...	...
Lambeth ...	1	1	3	2	7	...	...	3	...	1
London Mechanics' Inst. ...	15	14	17	15	28	5	9	9	2	2
Paddington ...	1	1	1	1	2	1	...	...	1	...
Louth ...	3	3	3	3	3	...	1	...	...	...
Newcastle-on-Tyne (Church Inst.) ...	2	2	5	4	5	2	1	1	...	1
New Swindon ...	25	18	4	2	8	...	2	3	...	2
Paisley (Artisans' Inst.) ...	35	31	31	22	31	3	9	10	...	9
Pembroke Dock ...	3	3	7	6	13	4	6	1	1	1
Poole ...	...	...	1	...	1	...	...	...	...	1
Portsmouth ...	4	4	4	...	16	2	8	...	...	...
Richmond ...	1	1	1	1	4	2	2	2	3	...
Slough ...	9	6	12	8	19	2	3	8	2	4
South Staffordshire Union (10 Centres) ...	...	...	49	33	79	9	22	26	1	16
Southampton ...	19	19	23	18	30	3	7	12	2	6
Wakefield ...	3	3	4	1	4	...	...	1	...	3

TABLE II—(CONTINUED.)

NAME OF LOCAL BOARDS.	No. of Candidates Examined at Final Examination by Local Board.	No. of Candidates who Passed Previous Examination by Local Board.	No. of Candidates Examined at Final Examination.	No. of Candidates who Passed at Final Examination.	No. of Papers Worked at Final Examination.	No. of First-class Certificates awarded.	No. of Second-class Certificates awarded.	No. of Third-class Certificates awarded.	No. of Prizes awarded to Candidates.	No. of Unsuccessful Candidates.
West Hartlepool .....	2	2	2	2	5	...	3	1	...	...
Woolwich (Royal Arsenal) .....	15	15	21	12	33	1	6	6	...	5
Worcestershire Union .....	86	23	16	11	28	1	6	7	...	5
York .....	1	1	8	7	11	1	3	5	...	1
Yorkshire Union:—										
Acomb .....	1	1	2	2	2	...	...	2	...	...
Halifax Mechanics' Inst. ....	9	9	16	13	22	1	5	7	1	3
Hunslet .....	...	...	1	1	4	...	1	3	...	...
Leeds Mechanics' Inst. ....	11	11	17	14	31	5	9	9	1	3
Middlesbro' .....	6	6	5	2	6	...	1	2	...	3
Slaidburn .....	1	1	1	...	2	...	...	...	...	1
Thirsk .....	3	3	4	3	7	...	...	4	...	1
Wilsden .....	1	1	2	2	6	...	...	4	...	...
Totals .....	*1,168	*904	1,096	839	1,570	203	420	520	51	257

\* No returns of the numbers of Candidates examined and passed at the "Previous Examination" were forwarded from the South Staffordshire Union (except Oldbury) and several other Local Boards.

TABLE III.—NUMBER OF PAPERS WORKED IN EACH SUBJECT IN THE FOUR LAST YEARS; WITH THE RESULT FOR THE YEAR 1866.

SUBJECTS.	1863.	1864.	1865.	1866.				
				No. of Papers Worked.	No. of First-class Certificates.	No. of Second-class Certificates.	No. of Third-class Certificates.	No. of Papers in respect of which no Certificate was awarded.
Arithmetic .....	358	431	446	383	52	67	129	135
Book-keeping .....	182	210	275	209	41	99	63	6
Algebra .....	81	93	68	65	8	10	28	19
Geometry .....	40	35	26	30	6	13	6	5
Mensuration .....	42	50	43	48	8	14	12	14
Trigonometry .....	12	13	10	9	2	3	2	2
Conic Sections .....	2	1	1	7	...	3	3	1
Navigation, &c. ....	3	4	4	2	1	...	1	...
Principles of Mechanics .....	11	8	11	16	1	2	6	7
Practical Mechanics .....	17	14	15	18	1	5	6	6
Magnetism, Electricity, &c. ....	21	22	19	8	...	...	4	4
Light and Heat .....	...	...	7	7	...	3	...	4
Chemistry .....	81	99	107	80	5	29	18	28
Animal Physiology .....	16	42	84	48	4	6	16	22
Botany .....	3	8	12	19	...	2	5	12
Floriculture .....	...	...	...	6	2	2	2	...
Fruit and Vegetable Culture .....	...	...	...	8	2	2	3	1
Mining and Metallurgy .....	16	11	6	3	...	2	1	...
Political and Social Economy .....	7	1	5	6	1	...	2	3
Domestic Economy .....	11	10	13	6	3	2	1	...
Geography .....	58	88	87	86	12	27	31	16
English History .....	71	89	94	78	7	19	17	35
English Literature .....	23	26	30	39	7	15	15	2
Logic and Mental Science .....	18	9	15	8	3	1	...	4
Latin and Roman History .....	16	21	9	9	2	4	3	...
French .....	88	77	99	116	5	23	63	25
German .....	18	26	19	9	3	4	2	...
Italian .....	...	...	4	5	1	2	...	2
Spanish .....	...	...	10	6	4	2	...	...
Free-hand Drawing .....	74	50	56	55	4	19	24	8
Geometrical Drawing .....	55	66	128	132	6	27	43	56
Music .....	32	28	40	49	12	13	14	10
Totals .....	1,360	1,540	1,744	1,570	203	420	520	427

TABLE IV.

OCCUPATIONS, PRESENT OR PROPOSED, OF THE 1,284 CANDIDATES FROM WHOM RETURN PAPERS WERE RECEIVED:—

Accountants (& Clerks)	4
Apprentices to the Linen Trade	3
„ Muslin Trade	1
Architects	7
„ Clerk	1
Assistants, Building	1
„ Surveyor's	2
„ Clothier's	1
„ Laboratory	2
„ Land Surveyor's	1
„ Licensed Victualler's	1
„ Music Publishers	1
„ in Observatory	1
„ Pawnbroker's	1
Attendant (sick-berth)	1
Auctioneer's Clerk	1
Baker	1
Bandsman	1
Blacksmiths	2
Block-cutter	1
„ maker	1
„ printers	2
Boiler-makers	3
Book-binders	2
„ sellers and assistants	4
„ keepers	34
Boot closer	1
„ maker	1
Brass-finishers	4
„ founders	2
„ moulder	1
„ turner	1
Bricklayers	9
Brushmakers	3
Butchers	2
Cabinet-makers	6
Card-room hand	1
„ maker	1
Carpenters	13
Carpet-weavers	6
Carriage body-maker	1
Carter	1
Cashiers	6
Chemists (& assistants)	20
„ and dentist	1
„ and Druggists	5
Choristers	2
Civil Engineers	9
Clerks, Bankers, Commercial, &c.	338
„ Carriers'	2
„ in Civil Service	2
„ Colliery	4
„ Customs	4
„ and Draughtsman	1
„ Insurance	1
„ Law, &c.	17
„ Ordnance Survey	2
„ Railway	16
„ Surveyors	3
„ Savings Bank	1
Clicker	1
Clog-makers	2
Cloth-lapper	1
„ dresser	1
Coach-builders	3
„ painters	2
Coal-agents	2
„ dealer	1
Collectors	4
Collier	1
Colour-mixer	1
Commercial Travellers	5
Compositor	1
Correspondent	1
Customs' Officers	2
Cut-looker	1
Dentists	2
Die sinker	1
Drapers, &c.	5
Draughtsmen	10
Druggists, &c.	7
Dyers	2
Engineers	43
„ Clerk	1
„ Mining	1
„ Naval	3
Engine-driver	1
„ Fitters	11
Engraver	1
Errand-boy	1
Excise Officer	1
Factory Operative	1
Fancy Leather-worker	1
Farmers	2
Fitters	21
Foremen	2
Gardeners	14
Gas-fitter	1
Glass-engraver	1
„ painters	7
„ stainer	1
„ trade, in the	1
Goods-agent	1
Governesses	10
Grinders	2
Grocers, &c.	9
Gunmaker	1
Hackle-setter	1
Harness-makers	2
„ weaver	1
Hawker	1
Hosier	1
Hotel-keeper	1
Inland Revenue Officer	1
Ironmongers	2
Iron-moulders	4
„ turners	6
Jewellers	2
Joiners	23
Labourers	4
Lamp-maker	1
Letter carrier	1
„ sorter	1
Librarian	1
Lithographer	1
Lock-makers	2
Machine-maker	1
Makers-up	3
Maltster	1
Manager	1
Manufacturers	2
Masons	2
Measurers	2

Mechanics	30
Medical students	3
Merchant	1
Messengers	2
Meter-inspectors	2
Millwrights	8
Moulder	1
Oil and Colourmen	2
Optician	1
Overlookers	3
Overman	1
Packers	2
Painters	2
„ and Gilder	1
Pattern-makers	7
„ designers	3
Pavior	1
Perfumer	1
Piecers	5
Piece looker	1
Ph. D.	1
Photographer	1
Photo-inst.-maker	1
Plasterer	1
Plumbers, &c.	5
Pocket-book maker	1
Police-serjeant	1
Poor law officer	1
Porter	1
Postman	1
„ messenger	1
Post-office stamper	1
Printers	7
„ lithographic	1
Pupil teachers	48
Railway-carriage builder	1
„ der	1
Reader	1
Registrar of Births and Deaths	1
Road-labourer	1
Saddlers	2
Salesmen	5
Schoolmasters	10
Schoolmistresses	2
Self actor minder	1
Sewer-pipe maker	1
Shawl cutter	1
Ship chandler	1
Shipwrights	22
Shoemakers	2
Shopmen	2
Shorthand writer	1
Silk-sizer	1
„ weaver	1
Silversmith	1
Sketch-maker	1
Small-ware manufacturer	1
Smiths	2
Spindle-makers	3
Spinners	6
Spur-plater	1
Staff-serjeant	1
Stationers (& assistants)	4
Stock-keeper	1
Stone cutter	1
„ masons	2
Store-keepers	3
Student in School of Art	1
Stuff merchant	1
Tailors	6
Teachers (others than pupil teachers)	28
Telegraph operator	1
Time keepers	3
Tool-makers	2
Turners	8
„ and fitters	8
Tutor	1
Undertaker	1
Upholsterers	2
Warehousemen & lads	59
Watchmakers	3
Weavers	42
Wheelwright	1
Whipmaker	1
Whitesmiths	2
Wire-drawer	1
Wool-sorters	11
Woolen trade, in the	2
Worsted-spinner	1
Writers	4
Undetermined, or not given	35
	1,284

The report of the discussion will appear in next week's *Journal*.

#### FINAL EXAMINATION, 1866.

A second prize of £3 in Geometrical Drawing has been awarded to No. 738—W. Vaughan, aged 25, of the City of London College, clerk, as well as to No. 1077—Henry B. Dorrell, as already announced.

From the "List of Certificates awarded to Candidates," given in last week's *Journal*, omit "507—Brock, David, 20, Glasgow Inst., clerk—Geog. (2d)."

#### PARIS UNIVERSAL EXHIBITION, 1867.

Meetings of the intending metropolitan exhibitors in classes 35, 37 38, 41, 42 and 43, have taken place at the Society's house during the past week, and sub-committees have been appointed for the allotment of space amongst the claimants in each class.

#### Proceedings of Institutions.

HALEY-HILL WORKING MEN'S COLLEGE AND YOUNG WOMEN'S INSTITUTE.—The annual report, presented last Easter (the end of the 11th year), testifies to the con-

tinued general success of the Institutions. During the past year, and indeed ever since the opening of the Working Men's College, numbers have never been wanting. To the utmost extent of the accommodation the college classes have at times been filled, and the average attendance, more especially of the younger students, has been very good. The Scripture class has been attended by many of the most intelligent and thoughtful students, the average being about fifteen; it is confined to the senior students. The English Literature and Grammar class has attracted a fair number of students. In Arithmetic no fewer than 133 candidates presented themselves at the late examination in the college. The numbers presenting themselves for instruction in Bookkeeping were so great that it was deemed expedient to have two classes; the first, or advanced class, being composed of those who had already taken certificates in this subject at the Society of Arts Examinations, or were known to be very fairly conversant with the subject. The junior students have been taught the more elementary principles, and both classes have acquitted themselves very well at the recent local examination. The Science classes have not been so well attended this year as last. The class in Zoology has been altogether relinquished. On the whole, the call for scientific teaching seems at present by no means commensurate with that for elementary instruction. The Social Economy class has been fairly attended by both the senior and junior divisions of the college. On this point the committee observe:—"Every day more clearly demonstrates the necessity for all intelligent men having a fair knowledge of the principles on which the just relations between all classes of society are based. No time is so well calculated for the implanting of a proper knowledge of these principles as the period of opening manhood, when the intellect is sufficiently developed to grasp the subject, and before the judgment is warped, or the mind prejudiced by the misrepresentations of many professing themselves to be the friends of working men." The Geography and History classes have been well attended; and a class in French has been commenced. The Young Women's Institute has not progressed in numbers during the past year to the satisfaction of the teachers. Evening classes for females have been opened in various other parts of the town, thus lessening the area whence scholars were drawn to the Institute. It appears that the total number now on the books of the College is 248, and the average attendance is about 150. In the Young Women's Institute the total number on the books is 54, and the average attendance about 30.

**WEDNESBURY MECHANICS' INSTITUTE.**—The twenty-eighth annual report speaks of a succession of difficulties which have attended the Institute for the past few years, and a continuance of the struggle with the downward tendency which has so continuously manifested itself. The year has been more than usually eventful as regards the stability of the Institute. The financial statement shows the receipts as £49 12s. 7d., and the expenses £54 8s. 11d., being an excess of expenditure of £14 16s. 4d. Against this amount there was a balance at the beginning of the year of £3 7s. 6d., thus showing a deficiency of £1 8s. 10d. There has been a considerable falling off in the subscriptions, and towards the close of the year, the committee, having received further distinct notices of withdrawal, which, upon an estimated statement, appeared to affect seriously the position of the Institute, had no alternative but to resolve upon recommending to the members the winding up of the Institute. The necessary resolutions were submitted and passed at a special general meeting held Feb. 16th, and the committee were proceeding to carry them into effect, when another meeting was held, and several members, feeling great regret at having to close such an Institute, undertook a canvass, and ultimately a statement was made which promised an increase of income of upwards of £30. This justified the members in rescinding their former resolution, and in de-

ciding to continue the Institute. In addition to the promised increase of revenue, the committee contemplate a reduction in several expenses. The committee have not thought it desirable, owing to previous losses, to undertake any course of lectures or entertainments, neither have any classes been held this year. No additions have been made to the library during the year, but the circulation does not appear to have been affected to any remarkable extent by this fact, the number of volumes taken out amounting to 1,500.

#### PARIS IMPROVEMENTS.

There is no diminution in the work of demolition and reconstruction which has now for several years proceeded with such unprecedented rapidity, and which seem destined in the end to obliterate nearly all the old land-marks of the city of Paris. The alterations which are being made in the neighbourhood of the Champ de Mars are naturally, with a view to the coming Great Exhibition, being pursued with more than ordinary vigour; the excavation of the heights of the Trocadero for the new Place of the King of Rome, so named from the fact that it was on that spot that Napoleon proposed to erect a palace for his son, the young "King of Rome," are being carried on by night as well as by day. Thousands of cubic yards are being carried by rail across the Seine to the Champs de Mars every day. It is at night that the sappers fire the mines which are gradually reducing the heights of the Trocadero to masses of rubbish. The earth-works are completed in parts, and the ground is being levelled for the grand esplanade of the Place du Roi de Rome. This esplanade will be upwards of sixteen hundred feet in length by about eight hundred in width, and there will be eight wide boulevards or avenues, in addition to the bridge of Jena, leading from it to various parts of Paris and Passy.

An interesting discovery was made the other day in the old island of the Cité, in the demolitions now going forward on the site of the new building for the hospital of the Hôtel Dieu. An enormous oak beam, more than fifty inches square, was found in one of the oldest houses; it was but little worm-eaten or decayed, and on one of its faces was found the following inscription, in rude but perfectly legible characters:—"I was placed here in the year 1450, and I was six hundred years old when I was taken out of the forest of Rovray." If this inscription is authentic, and the age of the tree were not overestimated, the tree from which this gigantic piece of oak was cut must have been almost contemporary with Charlemagne, and the wood must now be more than a thousand years old. One of the most remarkable instances of reconstruction now under hand is that of the corner of the Palace of the Tuileries nearest the river, called the Pavilion of Flora, and the long gallery which connects it with the Louvre. The pavilion, finished as regards the main work, is now in the hands of the sculptors and decorators, and begins to present a very imposing aspect. The upper part of the pavilion has two very important decorations; on the western face an ornamental fronton, surmounted by a colossal group of three figures, representing War, and, on the southern face, another group of the same dimensions, illustrative of Peace and Agriculture; the former of these beautiful frontons is by M. Cavelier, and the latter by M. Carpeaux, two of the most eminent sculptors in France. The wing, which will include, in that part nearest to the pavilion, a new *salle d'état*, or hall, for the meetings of the Emperor and the members of the two chambers; in the other portion, the extreme end of the great gallery of the Louvre, which has been demolished, and, below, a series of fine arcades giving access to the Place de Carrousel, is not so far advanced as the pavilion. It is, in fact, a very extensive work, and consists of nine parts, each crowned with its pediment, and the style is in accord with the

beautiful gallery of which it is a continuation. It is, moreover, the most elaborately decorated work which has been undertaken in Paris for many years; the whole of the upper portions of the building are covered with sculpture and ornaments. The lower part of the river front is Doric, with fluted pilasters ornamented with vine and ivy leaves, the capitals bearing lions' heads, crosses of the Legion of Honour, and bees. The pediments are alternately curved and pointed, and the frontons are decorated with the following sculptural works:—Agriculture, by M. Carrier-Belleuse; Navigation, by Madame Bertaux; Astronomy, by M. Ferrat; Commerce, by M. Choiselat; Amphitrite, by M. Cabet; Concord, by M. Walter; and Sculpture, by M. Perray. The roof is pierced by two rows of highly-decorated dormer windows and otherwise ornamented. The inner side of the wing is of the Ionic order, after the model of the central portion of the palace, by Philibert Delorme. The frieze is decorated with subjects representing commerce, war, music, and the chase. The first floor is Corinthian, the capitals of the pilasters bearing rams' heads; between the windows are niches for statues, and over them a series of medallions of Roman Emperors and poets. The attic story is similar to that of Philibert Delorme. The ornamentation of this portion is exceedingly rich; near each window is a seated figure, corresponding with the subject of the fronton above, executed in bas relief, and surrounded by laurels, and above these are groups of animals by the sculptors Delabrière, Cani and Fremiet,—two lynxes chained, and a Minerva; two dogs and a globe sprinkled with bees, and crowned with an imperial diadem; two hounds and a woman's head, with branches of oak and laurel; two otter hounds attached to a stag's head; two panthers chained to a vase filled with grapes. The first fronton, representing Diana the huntress, is by M. Merley, and beneath it are two figures of huntsmen, with implements of the chase. The second fronton is devoted to glory, and is from the chisel of M. Gumery; beneath is a man with a trident, and a Roman warrior, holding a javelin and a small shield with a lion's head. The subject of the third fronton is the rape of Europa, by M. Demesmay, with figures of a German warrior and a Roman soldier beneath. The fourth fronton is decorated with a group entitled History, by M. Franceschi, with figures of a soldier and a sculptor below. The fifth represents a Dryad, by M. Delaplanche, and beneath are Neptune and a youth, representing a river. On the sixth fronton will be a figure of Venus, by M. Vitani, with tritons blowing trumpets. The seventh represents Power, by M. Thomas, with figures of Hercules and Samson. On the eighth M. Perrault is to execute a Victory, with warriors below. The ninth and last fronton, which projects beyond the rest, are to be Cupid, by M. Soitoux, with figures of a woodman and an artist. On the entering angle, between the eighth and ninth frontons, will be two figures, Apollo holding a lyre and a laurel crown, and Paris, with crook and apple of discord. The whole of the pediments are connected by a balustrade, on which are vases decorated with masks of fauns, and crowned with flames. The roof on this side has a double range of windows, ornamented with rams' heads and garlands of flowers, the whole being executed in that rich lead repoussé work, which has lately been revived with such admirable effect. In this mechanical age too much encouragement cannot be given to works of this class, which form the strongest link between the artist and the *ouvrier*. The Louvre, the Tuileries, the Hotel de Ville, and other buildings, present much deserving of study in this kind of work. Before the summer is over the whole of the newly-constructed portion of the two palaces will be completed, at least as regards the interior, and the grand river front will then present a consistent whole, the beautiful work of the sixteenth century being no longer brought into comparison with the heavy inartistic building of the eighteenth century.

#### BELGIAN METHOD OF TEACHING DRAWING.

Last autumn, M. Hendrickx, inspector of the drawing classes in the communal schools of Brussels, was authorized by the Minister of Public Instruction to make an experiment in the Lycée Bonaparte, in Paris, of a system which is reported to have yielded excellent results in Belgium. Fifty adults answered the invitation; they consisted of students of the Polytechnic and Philotechnic Associations, commercial clerks, fitters and mechanics, in the employ of the Orleans Railway Company, and other workmen. With one single exception, the whole of these adult pupils were totally ignorant of drawing. After twenty-two lessons of one hour's duration each, with some unaided practice at home, the pupils were able to execute complicated designs with a firm hand and considerable taste. At the urgent request of the class, the Minister has decided that the experiment shall be continued, at the cost of the State, in the Lycée Charlemagne, by M. Bourson, painter, and associate of M. Hendrickx. The same gentleman has been appointed to conduct a similar course for the pupils of the primary normal school of Versailles, and another especially adapted for the teachers of the Seine-et-Oise. The system is also now under trial at Lyons.

The course established at the Lycée Bonaparte was mentioned in the *Journal* at the time; and it will be interesting, and perhaps useful, to reproduce a *résumé* of the report made on this method of teaching, which M. Armand Dumaresq, a well-known historical painter, and president of one of the classes for the Exhibition of 1867, has made officially to the Minister of Public Instruction in France.

M. Dumaresq says that the method of M. Hendrickx is a compilation from ancient systems. The bases of the science of drawing were laid down by Leonardo da Vinci and by Albert Durer, who published a treatise on drawing in 1557. All modern authors, says the reporter, from Paillet de Montabert downwards, have borrowed from Albert Durer. The work of the last-named artist comprises the geometric system of including within a square or a cube the figure that is to be demonstrated. M. Hendrickx quotes this idea, and makes it the foundation of his whole system. This method of framing in a known figure the design to be drawn is good, as it enables the pupil to pass readily from the known to the unknown; he finds in the horizontal and perpendicular lines of the diagram a series of starting-points, which serve the same purpose as those used by sculptors for the roughing out of a block of marble.

Albert Durer advocated the principle of designing by compass and rule as the Greeks did; Michael Angelo was the first to set up the dictum that an artist's compass should be his eye, and from that time the painters, Raphael amongst the first, abandoned the method of the Greeks, and a revolution came over art.

M. Hendrickx, in taking up this forgotten method, has, then, not invented a new system, but only made a discovery in the past. A good idea of his mode of carrying out this system will be obtained from a description of four books of the first and second degree. The first two contain the demonstration of lines and surfaces, and their application to forms represented geometrically, such as cubes, figures derived from the cube, and invariably enclosed in a cube, sections, cylinders, cones, pyramids, circles and spheres, and, lastly, curves of the teeth of wheels, balusters and vases, the series being carefully graduated. The other two books contain the construction of the principal generic figures:—First, a portion of forms of the first degree, with their shadows; then the elements of the proportions of the Tuscan order; of the leaves of living plants, such as the vine, oak, laurel, narcissus and acanthus, and their analyses in an ornamental point of view; lastly, the proportions of the human head and body. These models are well designed and well chosen, and their decorative quality is made clearly apparent to the student. The third series of books, or copies, con-

tains the compliment of the two former, and prepares the pupil for the study of the round.

Whatever may be the merit due to M. Hendrickx for having adopted the method of the Greeks as taught by Albert Durer, his practice in teaching deserves the greatest attention; the principal point consisting in the fact that the students draw with chalk upon the black board from the model produced before their eyes, in the same manner, by the teacher, who at the same time explains to them the method by which he produces what he places before them for reproduction. The pupils copy the drawing upon whatever scale they please, and the teacher points out any errors into which they may have fallen; between one lesson and another the students are expected to reproduce on paper what they have previously drawn on the board, choosing, as before, whatever scale or size they please, but of course preserving the proportions. The result of this reproduction from memory gives the exact measure of the appreciation of the lesson.

M. Dumaresq says, "I have seen some of these drawings made in such a manner that they might serve for models." Such a declaration is another proof of the well-known fact that in drawing as well as in everything else, intelligent teachers produce intelligent pupils.

That which is so difficult in ateliers, to continue our quotations from the report in question, namely, reproduction, on an enlarged or diminished scale, is no difficulty with M. Hendrickx's pupils; and it is a great point to have arrived at this, as workmen especially are compelled in practice to submit to the material necessities of their productions.

"I prefer," says M. Dumaresq, "this method of teaching to that of others—courses in which the models are not sufficiently gradual, where the pupil often chooses for himself the drawing he is to copy, and where the teacher gives his instruction in the same manner as if he had before him a class of youths devoted exclusively to the study of art." The progressive nature of the Belgian system furnishes guides for the master as well as for the pupil; they are forced to work together. If the duty of the teacher, who must have special aptitude, is far more onerous, the results are far more satisfactory than usual; he cannot confine himself to the giving of a certain amount of advice which any one may do; he must draw in presence of his pupils, and he thus offers to them the proofs of his demonstration. The results of the courses of M. Bourson are highly satisfactory; the drawings produced during the two classes conducted by him in Paris and at Versailles, amount to between five and six hundred; the Paris course only comprised twenty lessons—it began at the end of November and finished on the 10th of February. The number of pupils inscribed on the books was fifty-three, thirty-six only persevered throughout, and of this latter number seven had already studied drawing to some extent. "The results," says M. Dumaresq, "are very good." The pupils themselves express their opinion strongly in favour of the Belgian system.

The experience thus obtained in France, where drawing has been cultivated with much assiduity, of a system which originated in a foreign country, and the continuance of similar courses of instructions, under the authority of so zealous and intelligent a Minister of Instruction as M. Duruy, together with the testimony of M. Dumaresq, as contained in the official report referred to, give to the method of M. Hendrickx the highest claim to attention.

## Fine Arts.

**ART EXHIBITION AT LILLE.**—The town of Lille is preparing an exhibition of works of art to which considerable importance will be given. The Emperor has placed a prize medal, of the value of one thousand

francs, at the disposition of the management, and the Comte de Nieuwerkerke has informed the authorities of Lille that His Majesty will select from the exhibition the picture which he intends to present to the museum of that town.

**PROVINCIAL EXHIBITIONS IN FRANCE.**—The Bourdeaux exhibition is one of the most important after Paris, and the amount expended for works of art this year exceeded £2,057; of this, nearly £1,200 was paid by private persons for 60 works, rather over £800 for 34 works purchased by the society by which the exhibitions are instituted, and £60 by the authorities of the town for one picture; the total number of works purchased being, consequently, 95, and the average price between twenty-one and twenty-two pounds each. In the list of the painters whose works were sold are the well-known names of Rousseau, Antigua, Landelle, Boulangé, and two of the medallists of the present Paris Exhibition—Claude and Brown. The Society of the Friends of Art of the department of the Yonne, purchased fourteen works out of a small exhibition recently held at Auxerre. Considering the immense number of exhibitions opened every year by these local societies, large and small, the money annually devoted by the provinces to the purchase of works of art must amount to a very considerable sum.

**THE UNION CENTRALE DES BEAUX ARTS**, established two or three years ago in Paris, and to whose management was due the admirable exhibition of retrospective art held in the Champs Elysées last year, has received such an impulse from the publicity derived from that exhibition, that the adhesions and subscriptions to the society have enabled the directors to throw the doors of their institution open to the whole world of operatives without any charge whatever. The library and museum of the Union, in the fine old square called the Place Royale, are now open to all comers five days in the week—Friday only being reserved for the founders and subscribers, from ten till five o'clock, and from seven till ten in the evening. The lectures, which are given on three evenings in the week, are also gratuitous.

## Manufactures.

**LOCKS AND KEYS.**—At a recent meeting of the Institution of Mechanical Engineers, a description of a new construction of lock and key was communicated by Mr. J. B. Fenby, of Birmingham. The writer pointed out that in all previous locks there had been two important defects in principle, which are fatal to their security—the first being that, although access to the works of the lock is greatly impeded by many ingenious contrivances, they still admit of the works being got at through the keyhole, and thus allow of a series of attempts being made to pick the lock; while the second defect is the possibility afforded for repeating the trial of a false key, and thus perfecting it by successive alterations after trial. In the new lock described in the paper, which is the invention of the writer, the principle is adopted of dividing the key into two parts, the bit or portion by which the levers of the lock are raised being separate from the stem or handle of the key. For unlocking the lock the bit is inserted through a second keyhole into a radial slot contained in a solid rotating cylinder, the cylinder being then turned round by the stem of the key acting in the centre keyhole; the bit while being carried round is also pushed outwards along the radial slot by means of a cam, and is thus made to protrude from the circumference of the cylinder sufficiently to act upon the levers of the lock, and thereby set the bolt at liberty to be withdrawn. The bit is then pushed out of the radial slot, and drops into a receptacle inside the door; and the further revolution of the cylinder with-

draws the bolt, and unlocks the door. The consequence of this mode of construction is that, as soon as the bit has been inserted in the lock and the cylinder turned round for unlocking, the radial slot in the cylinder is carried away from the keyhole, which is completely closed by the solid cylinder, whereby all access to the interior of the lock through this opening is effectually prevented, nor can anything be passed into the lock in this way except a detached bit of metal not larger than the bit by which the lock is opened. The centre keyhole, into which the stem of the key is inserted for turning the cylinder, is simply a blind socket with parallel sides, and without any communication with the interior of the lock. The only possibility of opening the lock by fraudulent means lies, therefore, in the use of a counterfeit bit introduced into the lock in place of the true bit; but this counterfeit is absolutely lost to the operator and retained inside the safe at the very first trial, so that he is not only limited to a single attempt, but from the attempt itself no clue whatever is obtained as to the nature of the defect in the counterfeit. In consequence of the levers not being accessible for feeling through the keyhole, and therefore not requiring to be all shaped to the same average curve at the portion acted upon by the key, each lever can be shaped to its own proper curve, and the play in the action of the levers is thus reduced to a minimum; hence a much slighter amount of error in the counterfeit than is admissible in the case of previous locks will prevent its opening this lock. The importance of these advantages in the principle of the new lock is illustrated by the celebrated bullion robbery on the South-Eastern Railway some years ago, which attracted special attention from the remarkable skill with which it was accomplished and the large value of the property stolen; but even in this case success was not attained until as many as seven trials had been made with the same false key, the latter being altered after each trial according to the indications obtained from the trial, until it was at last sufficiently perfected to be capable of opening the lock of the bullion safe. In that instance also the successive trials were made without leaving any indication behind that the lock had been fraudulently attempted, although it was fitted with detector contrivances for this special purpose; but in the present lock the false bit, being retained inside the safe, is found when next the safe is opened, and furnishes proof of the fraudulent attempt having been made, as well as showing how near the counterfeit key has approached to the original. The locks are made with six levers, and the corresponding steps in the bit are cut with the greatest accuracy by a machine specially contrived by the writer for the purpose, with a permutating arrangement, having an extent of permutation admitting of each lock differing from every other lock made. For locking the lock, the stem only of the key is required, as the bolt is shot simply by turning the cylinder; and as the keyhole for the stem is made with a notch cut out on one side only, while the cylinder is not permitted to make a complete revolution, the key stem cannot be taken out of the lock whilst it remains unlocked. This lock has an important advantage in simplicity as well as solidity of construction, as there are no more than sixteen separate pieces altogether in the complete lock; moreover, as both keyholes are simply blind holes with parallel sides, having no communication with the interior of the lock, they do not admit of injury to the lock by the explosion of gunpowder. Specimens were exhibited of the new lock, the action of which was shown both with the true key and with counterfeit keys; and it was shown by trial that the counterfeit failed to open the lock notwithstanding that, by means of the permutating cutting machine, it had made a much nearer approach to a perfect copy than was practicable in the best handwork from a wax impression. The key-cutting machine, for cutting the bits, was also exhibited, having been lent for the purpose by Messrs. Whitfield, of Birmingham, the makers of the lock.

## Commerce.

**SUPPLY OF GAS TO LONDON.**—The Committee of the House of Commons have brought their inquiry into the supply of gas to the metropolis under the Act of 1860, to a conclusion, but they have still to deal with the Gas Bills of the various companies, referred to them by the House. It appears from the returns which have been laid before them, that the total revenue paid by the consumers and the public for gas in the metropolis, amounts to the large sum of £1,767,261 19s. 9d. per annum. This is the total for the year ending 31st December, 1865, and it increases every year with the growth of the metropolis and the increased consumption. This large sum has been levied most unequally. The London Gaslight Company have been charging their consumers, in outlying districts, 5s. per 1,000; the Phoenix Company have been charging in their outlying districts 4s. 9d. per 1,000; whilst the Independent and South Metropolitan have been charging 3s. 4d. per 1,000 only. A consumer, therefore, living in a street where the South Metropolitan and the Phoenix districts join, has been compelled by Act of Parliament, under the districting system, to take gas from the Phoenix at 4s. 9d., whilst the South Metropolitan, whose pipes run through the same street, were willing to supply it to him at 3s. 4d., but were not allowed to do so. It appeared, also, that the West-London Junction Company is making and supplying gas at this moment, at a profit, for 2s. 10½d. per 1,000 feet only, being the same article as to purity and illuminating power as the Imperial Gas Company supply to the same district at 4s. 6d.; but the West-London Junction Company cannot compete with their rivals, being limited to the Great Western Hotel and Railway Station under the contract entered into before the Act passed in 1860. Assuming that all the gas companies could produce gas at the same cost, the public, since the Act of 1860 came into operation, have been actually paying one-third more than they ought for their gas, entailing the enormous loss to the inhabitants of London of nearly £600,000 per annum. The committee have not limited their investigation to the price of gas, but have inquired into its purity and illuminating power, and have taken evidence that the gas of London is inferior in both respects to that of the other towns of England. Messrs. Howell and James produced silk goods the colour of which had been entirely taken away by the gas consumed in their shop; and Mr. Medwin, of Regent-street, produced boots which tore up like brown-paper; and although the organ of the gas companies suggest that the rottenness of the leather was produced by blacking, the suggestion can scarcely apply to a pair of boots which have not left the boot-maker's shop. As to illuminating power, the witnesses were unanimous in their statement of the dark condition of London as compared with Edinburgh, Glasgow, Manchester, Birmingham, Plymouth, Brighton, &c. The committee, after sitting in deliberation for nearly three days with closed doors, have presented to the House a report, stating that the working of the Gas Act of 1860 has totally failed; that the illuminating power and quality of gas is better in the provincial towns than it is in the metropolis, and the price cheaper to the consumers; that the purification of gas in the metropolis is imperfect, and an excess of sulphur remains, highly injurious to pictures, leather, &c.; that the result of the passing of the Act 1860 was to increase the price of gas to the public. They recommend that the illuminating power should be increased and its purity improved, and that a chemical board of three members, to be appointed by the Secretary of State, should regulate the purity of the gas, and appoint testing places; that the gas companies should not be at liberty to make up former deficient dividends out of future profits, and that losses to the gas companies through neglect of their works should not fall upon the consumers, as in the case of the Wood-street

fire, where £25,000, instead of being taken from the shareholders, was taken from the consumers by the Great Central Gas Company. They find that the mode of recovering penalties against gas companies at present is totally inoperative. And, lastly, whilst recommending that the districting system should be continued with a view to economy, they are of opinion that the several existing companies should either be amalgamated or transferred to some public body in the metropolis on such terms as Parliament may think fit to impose.—*Gardeners' Chronicle*.

### Colonies.

THE INTERCOLONIAL EXHIBITION, which is to be opened in Melbourne in August, is attracting much attention in Queensland, and preparations are being made for having that colony fully represented. Among the principal specimens that will be sent are gold, silver, copper and other ores, coal, marble, wood, granite, &c. The gold fields of the north are gradually becoming more productive, and giving employment to a larger population. The Peak Downs copper mines bid fair to rival some of the rich mines of South Australia. There are extensive coal measures in Queensland, and large quantities of tolerably good coal have been produced from a short depth below the surface. Fine granite has been obtained at the site of the new waterworks reservoir at Enoggera, and some specimens of a hard description of stone, admirably suited for building purposes, have been found on the ranges on the Brisbane side of Enoggera. Marble of fine quality has been discovered at Gladstone. The manufacturing industry of Queensland will also be fully represented. South Australia, almost the only colony which has failed to take up the proposal of the Victorian Government, has at last entered the lists and adopted the preliminary steps to secure a representation of the products of that colony at the Exhibition. At Ballarat an effort is being made to have a local exhibition of the contributions of that district before they are forwarded to Melbourne. The same thing is being done in South Gipps Land. In New South Wales the initiatory step appears to have been taken by the municipality of Grafton, the mayor of that place having responded to an address forwarded by the Melbourne Commissioners by giving promises of hearty co-operation in that district. The Exhibition Commissioners are endeavouring to obtain the co-operation of the neighbouring colonies in the preparation of a series of tabulated statistics, with a view to the ultimate collection and a collation of the whole—a scheme which, if properly carried out, will furnish a most valuable and exhaustive record of comparative statistics; with this idea is that of the preparation of vocabularies.

THE IMPORTS AT PORT ADELAIDE from the beginning of the year to March 17, were valued at £560,157, and the exports at £584,771. The Customs receipts for the same period were £56,262, and the total quantity of land sold by Government realised £101,279.

THE GRASS TREE IN AUSTRALIA.—The grass tree (*Xanthorea*) is to be found in nearly all parts of Australia, but up to a recent period it was supposed only to be a useless growth. Experiments have recently been made, however, with the root, which usually weighs from 10lb. to 50lb. From the outer portion of the root gum shellac in large quantities is said to be obtainable; the refuse contains a large quantity of gas, which can be made available for lighting the works. From the inner portion is extracted a spirit said to be equal to the best brandy. After distilling, a quantity of saccharine matter remains, from which sugar can be extracted. The supply of this tree appears to be almost unlimited.

FALKLAND ISLES.—Besides the anthracite coal previously discovered, a fine quality of bituminous coal has been found. The English Government have determined on fortifying the Islands.

### Obituary.

LEON LOUIS NICOLAS JALEY, sculptor, born in Paris in 1802. He entered the Ecole des Beaux Arts in 1820, won the grand prize of Rome in 1827, received four medals and the cross of the Legion of Honour between 1833 and 1837, and in 1856 he was elected a member of the Academy of the Fine Arts in the Institute of France in the place of the late David d'Angers. Several statues and busts by Jaley are in the galleries of the Luxembourg and of Versailles.

### Notes.

IRON IN SUGAR.—Mr. Rodwell, F.C.S., in a letter to the editor of *Travers's Circular*, says:—Numerous complaints are being made at the present time in regard to the black colour which is communicated to tea by various kinds of moist brown sugar. From this fact, it is supposed that the sugar contains some deleterious substance added to it during the process of manufacture, but this is not the case. The fact is, the colour is produced by the presence of a minute quantity of iron in the sugar, which enters into combination with the tannic acid, always existing in tea, and forms the intensely black compound, tannate of iron. In the sugar refinery syrups are frequently passed through iron pipes, received in iron cisterns, crystallized in iron moulds, and drained into iron pots; in these various processes small quantities of iron are dissolved by the acid of the sugar, and are rapidly diffused through the entire mass; while one portion passes into the treacle, another is retained by the sugar, and is the cause of the effects mentioned above. It is needless for me to remark that the trace of iron in sugar exercises no pernicious effect upon the system; it is rather wholesome than otherwise."

MUSEUM OF THE ANTIQUITIES OF PARIS.—It is reported that a museum is about to be established in the Hôtel de Ville, to contain all objects of interest connected with the history of the city; an excellent idea, which it is hoped may be carried out, and thus establish a precedent for collections of the same kind in other great capitals and cities where so many matters of interest lie concealed beneath the dust of the past, and in the crowded haunts of the present day. The municipal authorities of Paris possess already the nucleus of such a museum; they purchased, in 1856, the very curious collection of historic badges and ornaments in lead, made by M. Forgeau, from the dredging of the Seine; and they have just purchased two pictures by Raguenet, lately belonging to M. Boittelle, formerly prefect of police, one representing the Hôtel de Ville as it was in the year 1751, and the other being a view of the Tuileries two years later. It is said to be the intention of the authorities to purchase the collection of medals and antiquities relating to ancient Paris, made by M. Legras. It is a pity that such a museum was not commenced ten years since, for the demolitions which have been made in Paris have yielded a rich harvest to collectors; but there is no doubt that masses of curiosities are still to be found, and many now in private hands will, no doubt, soon find their way to the Hôtel de Ville when a suitable gallery is prepared for them. Those who are not impressed with the interest and real value attaching to such collections as that now proposed to be made for the city of Paris, should pay a visit to the Museum of the City of Rouen, certainly one of the most admirable that has been established during the present century. It was true that Rouen was peculiarly rich in historical curiosities and memorabilia, but the wealth which is contained in such capitals as Paris or London is unknown until a fitting place is prepared for their reception. Our gallery of historic portraits shows what treasures of historic art may be col-



lected in a few years; and the memorials of past times are to be found in every street, lane, and corner of an ancient town. The Prefecture of the Seine will find little difficulty in the formation of an interesting collection. The authorities of London have only to follow the example, and the Museum of the City of London would soon be one of the lions of the metropolis.

### MEETINGS FOR THE ENSUING WEEK.

- MON.....British Architects, 8.  
R. United Service Inst., 8½. "Collisions at Sea, and their remedy by means of an improved system of lights." Adjourned discussion on a paper by Commander J. A. Heathcote, late H.M. Indian Navy.
- TUES. ...Statistical, 8. The Duke of Argyll, "On the economic condition of the Highlands of Scotland."  
Anthropological, 8.  
R. Horticultural, 3. Mr. Bateman, "On Fremontia Californica, and other plants."
- WED. ...Meteorological, 7. Annual Meeting.  
Geological, 8. 1. Mr. S. V. Wood, "On the structure of the red crag." 2. Mr. H. W. Bristow, "On supposed remains of crag on the North Downs, near Folkstone." 3. Rev. O. Fisher, "On the 'warp' of Mr. Trimmer; its age and probable connexion with the latest geological events." 4. Mr. Salter, "On faults in the drift gravel at Hitchin, Herts." 5. Mr. J. W. Flower, "On some flint implements from the Little Ouse, near Thetford." 6. Mr. R. J. L. Guppy, "On the relations of the tertiary formations of the West Indies." 7. Dr. J. Young, "Notice of new genera of carboniferous Glyptodipterines." 8. Dr. Young, "On the systematic position of *Chondrosteus*." 9. Lieut.-Col. Neale, "On the discovery of new gold deposits in the district of Esmeraldas, Ecuador." Communicated by the Foreign Office. 10. Mr. J. S. Wilson, "On the geology of the Pacific coast of Ecuador." Communicated by Sir R. I. Murchison. 11. Mr. A. Leith Adams, "On the discovery of remains of *Haltitherium* in the miocene beds of Malta." 12. Mr. A. Leith Adams, "On bones of fossil Chelonians from the ossiferous caves and fissures of Malta." R. Society of Literature, 4½.
- THUR. ...Zoological, 4.  
Royal, 8½.  
Antiquaries, 8½.  
Linnæan, 8. 1. Dr. Welwitsch, "*Sertum Benguelense*." 2. Dr. Sigerson, "On cortical cuneate rays." 3. Messrs. R. L. Guppy and Jabez Hogg, "On the lingual dentition of some West Indian *Gasteropoda*." 4. Mr. Thomas Edwards, "Notes on some of the smaller crustaceans." Chemical, 8. 1. Messrs. Crace Calvert and Johnson, "Action of acids on metals and alloys." 2. Dr. Debus, "Constitution of some carbon compounds." Numismatic, 7. Annual Meeting. Philosophical Club, 6.
- SAT .....R. Botanic, 3½.

## Patents.

From Commissioners of Patents' Journal, June 8th.

### GRANTS OF PROVISIONAL PROTECTION.

- Albums for photographs—1473—C. McFarland.  
Bedsteads, &c., metallic—1427—J. Tombs.  
Boiler furnaces—621—J. D. Dow.  
Candles, adaptable ends for—1420—J. L. and J. K. Field.  
Carriages, doors for—1413—P. Devilliard and A. Postweiler.  
Cast-iron, treating—1430—J. Livesey.  
Clod-crusher—1443—I. James.  
Combustible and inextinguishable compound—1411—J. Sharp and R. Smith.  
Composition for journal boxes or bearings—1485—J. H. Johnson.  
Concrete, mixing—1435—P. J. Messent.  
Condensing apparatus—1406—P. Vandrilyl.  
Cotton-gins—1397—G. Macdonald.  
Cotton, &c., compressing and packing—1434—J. T. Wood.  
Doors, &c., stop-centre for—1465—J. W. Hoffman.  
Engines, motive-power—1451—S. Douglas.  
Engines, motive-power—1401—J. Bernard.  
Engines, rotary—1402—J. Beale.  
Engines, rotary—1461—W. H. C. Voss.  
Fencing hurdles, wrought-iron—1505—W. Bayliss, jun.  
Files, machinery for cutting—1507—G. T. Bousfield.  
Fire-alarms, self-acting—1376—J. H. Johnson.  
Fire-arms, breech-loading—1396—W. E. Newton.  
Fire-arms, breech-loading—1501—W. R. Pape.  
Fire-arms, extracting cartridges from—1489—T. Woodward and G. Fallows.  
Fuel, purification of—1471—J. D. Whelpy and J. J. Storer.  
Furnaces—1354—T. Wimpenny.  
Furnaces—1398—J. Hampton.  
Greenhouses—1399—T. H. P. Dennis.  
Heat, non-conducting substances for impeding passage of—1327—J. A. Jones.  
Hemp, &c., preparing and spinning—1426—H. B. Barlow.

- India-rubber, machinery for cutting—1481—J. M. Dunlop.  
Infants' feeding bottles—1409—P. J. Morand.  
Lath-cutting machinery—1418—J. Brown.  
Light and heat, obtaining from liquids—1320—J. L. Norton and A. Giles.  
Locks, connecting handles to—1352—J. M. Hart.  
Looms—1335—D. Sowden and R. C. Stephenson.  
Looms—1429—W. Gadd and J. Moore.  
Looms, self-acting temples for—1269—T. J. J., and N. Blezard.  
Lubricating compounds—1432—A. B. Blackburn.  
Marine steam-engines and surface condensers—1433—A. Crichton.  
Metal, raising and stamping—1405—D. J. Fleetwood.  
Metals, moulds for casting—1479—R. Canham.  
Metals, rolls for rolling—1477—C. T. Hill.  
Metallic acetates and carbonates—1332—R. Rowland.  
Metallic barrels—1374—W. E. Newton.  
Metallic wires, connecting—1503—W. E. Newton.  
Motive power—1422—M. Semple.  
Mouldings, preparing and fluting—1407—R. Gesell and A. Lea.  
Mowing machines—1414—W. B. Bunker.  
Mowing machines—1424—J. B. Brown.  
Musical instruments, percussive—1220—J. H. Johnson.  
Ornamental fabrics, weaving—1455—J. and R. Cunningham.  
Perfumes, apparatus for scattering—1412—J. W. Fox.  
Pipes and tubes, joining—1351—W. Austin.  
Pumps—1475—D. Thomson and W. Porter.  
Rails, securing—1421—G. J. Vincent.  
Railway trains, signalling between passengers and guard—327—W. J. Blinckhorn.  
Railways, supporting rails of—1481—G. Spencer.  
Sewing machines—1270—W. B. Bartram.  
Silk-dressing machinery—1452—T. Greenwood.  
Slag, extracting copper or iron from—1403—J. Thomas & A. Prince.  
Slags, &c., treatment of—1442—J. J. Marcails.  
Spinning frames—1463—T. Blain.  
Steam-boilers—1457—T. Green.  
Steam-boilers, removing incrustation from—1495—G. Haseltine.  
Steam-boilers, supplying with water—1487—G. Davies.  
Steam-engines, rotary—1441—A. V. Newton.  
Steam-ships, propelling and steering—1415—R. Griffiths and A. Rigg, jun.  
Taps—1419—H. Wilson.  
Textile fabrics, manufacturing—1428—A. Casse.  
Textile fabrics, drying and calendering—1450—J. Longbottom and J. Eastwood.  
Textile materials, preparing and cleaning—1444—W. Rowan.  
Tobacco-pipes—1453—W. Snell.  
Washing machines—1423—N. Walton.  
Water, instrument for measuring depth of—1404—W. E. Newton.  
Weaving, heddles and heads for—1438—J. McLintock.  
Weaving, reeds for—1425—J. D. Ramsden.  
Yarns, dyeing—1440—W. E. Newton.

### INVENTIONS WITH COMPLETE SPECIFICATIONS FILED.

- Hoes, trowels, &c.—1550—N. Brand.  
Tanning—1518—G. T. Bousfield.

### PATENTS SEALED.

- |                                  |                                  |
|----------------------------------|----------------------------------|
| 3191. J. Townsend.               | 3230. A. Guye.                   |
| 3193. J. T. Griffin.             | 3237. J. Masson.                 |
| 3202. C. Esby.                   | 3242. H. G. Fairburn.            |
| 3206. A. Budenberg.              | 3243. W. Robinson.               |
| 3217. J. H. Smith.               | 3259. J. A. Longridge.           |
| 3218. F. B. Doering.             | 3265. C. Liddell & R. S. Newall. |
| 3219. A. S. Brooman.             | 3289. T. Rickett.                |
| 3220. H. F. McKillop.            | 3306. G. Hawksley.               |
| 3221. B. Porritt & W. Priestley. | 3311. L. D' Aubreville.          |
| 3222. W. Brookes.                | 3355. W. F. Cochrane.            |
| 3223. G. E., and A. A. Atkin.    | 948. C. A. Shaw.                 |
| 3224. J. Sanderson.              | 1036. G. Haseltine.              |
| 3228. H. Prowse.                 |                                  |

From Commissioners of Patents' Journal, June 12th.

### PATENTS SEALED.

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|--------------------------------|--|
| 3231. W. Winter.               | 3343. J. Benn and G. O. Luckman.         |
| 3235. J. C. Wilson.            |  |
| 3247. G. Warriner.             | 3362. W. Harrison and T. Walker.         |
| 3250. C. Blyth.                | 3367. J. E. Napier and W. J. M. Rankine. |
| 3253. R. Ransford.             | 31. W. E. Newton.                        |
| 3254. R. Badger.               | 47. W. Clark.                            |
| 3256. C. Pengilly.             | 188. W. E. Newton.                       |
| 3267. F. Johnston & W. Astley. | 202. W. Jeffries.                        |
| 3275. C. A. McEvoy.            | 228. M. Silvester.                       |
| 3276. W. Creasy.               | 500. W. and J. W. Wood.                  |
| 3280. L. Durand.               |  |

### PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

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|---------------------|------------------------|
| 1490. J. Shand.     | 1439. H. Bessemer.     |
| 2151. A. V. Newton. | 1471. T. C. March.     |
| 1426. J. Petrie.    | 1530. R. Jobson.       |
| 1498. R. W. Gordon. | 1455. C. L. Van Tenac. |
| 1412. N. Walton.    |                        |

### PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

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|--------------------|---------------------|
| 1383. J. Ferrabee. | 1407. M. J. Haines. |
| 1384. W. Green.    | 1425. A. Smith.     |
| 1395. C. De Borge. |                     |